

NORTON SOUND AREA COMMERCIAL AND SUBSISTENCE  
SALMON FISHERIES MANAGEMENT PLAN 1994

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and

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## INTRODUCTION

The Norton Sound area extends from Cape Douglas south to Canal Point Light and includes over 500 miles of coastline (Figure 1). This area is divided into six subdistricts. Each subdistrict contains at least one major spawning stream with commercial fishing effort located in the ocean near stream mouths.

Five species of Pacific salmon occur in the area. Pink salmon are the most abundant species. The even year returns are stronger than the odd year returns which have declined drastically since 1983. In recent years, chum salmon have also declined in abundance. Coho have been accounted for the most commercial poundage for the last two years. Chinook salmon are the third most important commercial species. Sockeye salmon are in low abundance and rarely occur in streams other than the Sinuk and Pilgrim River systems where small spawning stocks exist.

Staffing for salmon management within Norton Sound includes two management biologists, a field office assistant and seven seasonal employees during the summer months. Anticipated management projects in 1994 include: Kwiniuk River counting tower; Nome River counting tower; periodic aerial surveys of index spawning streams; catch sampling and monitoring efforts at Unalakleet and Moses Point; and test fishing on the main stem of the Unalakleet River.

## STATUS OF STOCKS AND FISHERIES

Commercial fishing began in 1961 in the Unalakleet and Shaktoolik Subdistricts; 1962 in the Golovin, Moses Point, and Norton Bay Subdistricts; and in 1964 in the Nome Subdistrict.

The 1993 combined commercial catch of 263,670 salmon of all species included 8,972 chinook, 279 sockeye, 43,283 coho, 157,574 pink and 53,562 chum salmon. The chinook harvest was 53% and 11% above the 1988-1992 and 1983-1992 averages, respectively. The coho harvest was 43% below the previous 5-year average and 10% above the recent ten year average. The pink salmon harvest which has not often been a directed fishery was 864% and 385% above the recent five and ten year averages. The chum harvest was 31% and 57% below the recent five and ten year averages. Historical catch data for the Norton Sound District is presented in Table 1.

During the 1993 season, 153 fishermen made at least one delivery. The number of participating fishermen during 1993 was slightly above the 10-year average of 142. Typically, effort levels drop when chum salmon returns are poor. The higher level of effort during 1993 can be attributed to the new pink salmon market. The cold temperatures and relatively small amounts of snowfall during the winters of 1981-1982 and 1983-1984 apparently contributed to the emergence of an odd-even year cycle of pink salmon returns. The past three odd year returns were well below the returns experienced during the 1978-1984 period. Even year returns were at high levels during the same time period; however, even with a record pink salmon return in 1984, the resultant 1986 return was well

below the 5 year (1981-1985) and 10 year (1976-1985) averages. The strong pink salmon return in 1992 is expected to produce a strong return in 1994, although the parent year may be stronger.

The pink salmon market in Norton Sound has historically been very sporadic; therefore, pink salmon catch statistics do not accurately reflect actual return strengths for this species from year to year. However, fishing effort and markets for other salmon species have been fairly consistent in Subdistricts 5 and 6 over the last ten years. Thus, catch statistics, especially in the Unalakleet Subdistrict, are an index of annual returns of chinook, coho, and chum salmon.

Commercial fishermen received approximately \$322,117 for their catch in 1993. These earnings rank as the lowest value on record since 1976, and were 35% below the 1988-1992 average of \$492,425. This low fishery value was attributed to the lack of competitive markets, low prices paid per pound for all salmon species, and the poor chum returns in Subdistricts 1, 2 and 3. Prices paid to the fishermen averaged \$0.72 per pound for chinook, \$0.40 per pound for sockeye, \$0.22 per pound for coho, \$0.24 per pound for chum salmon, \$0.15 per pound for pink, and \$1.76 per pound for coho salmon roe.

#### OUTLOOK FOR 1994

Run forecasts and harvest projections for the 1994 commercial salmon season are based on qualitative assessments of brood year returns, subjective determinations of fresh water over-wintering survival and ocean survival, and projections of local market conditions. Salmon buyers will probably operate in most of the subdistricts of Norton Sound during 1994. The chinook return is expected to be below average. Chinook commercial harvests are expected to range from 4,000 to 6,000. Pink salmon are expected to be strong, especially since it will be an even year cycle. In recent years, there has been no market for Norton Sound pink salmon, but a market for one million pink salmon is expected during 1994. Given this market and a typical even year return, the pink salmon harvest could be significant. Chum and coho salmon escapements were not observed during the 1994 brood's parent year (1989 and 1990) due to high water and inclement weather conditions. A weak return of chum salmon is expected, but an average return of coho is expected. Harvests of chum are expected to range from 20,000 to 50,000. Commercial coho harvests are expected to range from 40,000 to 60,000.

#### GENERAL MANAGEMENT STRATEGIES

Each subdistrict is managed for a commercial target species for portions of the season. Regulations exist to allow additional fishing periods in which only gill nets with 4-1/2" mesh or less may be fished in order to utilize the pink salmon resource.

The basic regulation that controls the commercial salmon harvest is the scheduled weekly fishing period. Once the season is underway, commercial fishing is generally allowed 4 days per week, from 6:00 p.m. Monday to 6:00 p.m. Wednesday and from 6:00 p.m. Thursday to 6:00 p.m. Saturday. The Nome and Moses Point Subdistricts are exceptions to this fishing schedule, where commercial fishing is allowed only 2 days per week, from 6:00 p.m. Monday to 6:00 p.m. Tuesday and from 6:00 p.m. Thursday until 6:00 p.m. Friday. If a market for pink salmon develops this summer, fishing periods may be modified to take full advantage of the relatively short time when high volumes of top quality pink salmon are available.

Regulations provide for the commercial fishing season to be opened by emergency order between June 8 and June 20. However, due to late breakups during recent seasons, the commercial fishery has opened by emergency order after June 20, during some years. If breakup timing in Norton Sound is normal in 1994, and runs are not judged to be early and strong, the opening date will be approximately June 16 for chinook, July 1 for pink and July 26 for coho salmon. There will be no directed chum salmon fishery during 1994. The season ends by regulation on August 31 in the Nome, Golovin, and Moses Point Subdistricts and on September 7 in the Norton Bay, Shaktoolik, and Unalakleet Subdistricts. If an early ice breakup occurs in Norton Sound, fishermen will be encouraged to relay early subsistence catch data to Department representatives.

Timing and abundance of the chinook salmon run will be monitored by Department personnel conducting fishermen interviews and operating a test net in the Unalakleet River. Once increasing catches have been observed for at least 7 days at the mouth of the Unalakleet River, the Unalakleet and Shaktoolik fisheries will be opened by emergency order. King salmon periods will be scheduled twice weekly and will be 24 hours in length.

The Nome Subdistrict opens by regulation after July 1 although no commercial openings are anticipated during July. Initial fishing periods in any subdistrict may be only 24 hours in duration until run strength and timing information allows an assessment of run strength.

Concern for the chum salmon stocks, particularly those of northern Norton Sound, is the reason for the decision to discontinue all directed commercial chum salmon fisheries in Norton Sound. Commercial fishing will be directed at King, pink and silver salmon. Gear and time will be regulated to minimize harvest of chum while allowing appropriate harvests of other salmon stocks. Reduced fishing time may be required for conservation purposes if run magnitudes are below average and fishing effort remains high. Effort, catch and escapement data will be compared with previous seasons to assess relative return strength for the current season.

Aerial surveys of index spawning streams will begin in early July and will continue through peak spawning periods in late July for chinook, chum, and pink salmon and mid-September for coho salmon. Catch and effort data from the commercial fishery will be compiled after each fishing period for each subdistrict. Counts of salmon moving past the Nome River and Kwiniuk River counting towers and the Unalakleet River test fishery catches will be radioed on a daily basis to the Nome office. Inseason commercial catch rates and various escapement projects are used as primary escapement indices since aerial surveys

usually take place late in the season after effective conservation actions could be implemented in the fishery. Escapement objectives for chum salmon for selected Norton Sound index streams are presented in Table 2.

Commercial fishermen may not fish for subsistence purposes during weekly closures of the commercial fishing season. The purpose of this regulation is to minimize the illegal sale of subsistence caught salmon and insure adequate spawning escapements. Commercial fishermen may retain a portion of their commercial catch for personal use or fish for subsistence before and after their commercial fishing season. Also, persons not engaged in commercial salmon fishing as CFEC permit holders, crew members, or tender boat personnel may subsistence fish seven days per week in all subdistricts, except the Nome subdistrict and in the Unalakleet River. The Alaska Board of Fisheries adopted a regulation in December 1984 allowing commercial fishermen to subsistence fish in the Unalakleet and Shaktoolik River drainages 7 days per week from July 15 to August 1 with beach seines and gill nets with mesh size of 4-1/2 inches or less. More recently, the Board adopted a regulation requiring commercial salmon fishermen to report their unsold salmon catch on their fish tickets. Unanchored subsistence nets are prohibited in the Unalakleet River from June 1 to July 15.

An informational program will be broadcast over a Nome public radio station to inform fishermen of current regulations, catches, escapements and department activities. Also, permanent personnel will periodically visit each fishery to disseminate fishery information and answer questions. The Unalakleet office will be open daily, except Sunday, throughout the season.

## SPECIAL MANAGEMENT STRATEGIES

### Nome Subdistrict

The cumulative fishing pressure of commercial, subsistence and sport fishing on local Nome Subdistrict stocks, which are less abundant than in other portions of Norton Sound, requires special management strategies. Unlike other subdistricts, nearly all the spawning streams are accessible by road to subsistence and sport fishermen. During the last five years (1989-1993), an average of 150 permits have been issued yearly for subsistence fishing in the Nome subdistrict. Reported subsistence harvests have averaged 2,943 chum salmon and over 6,647 total salmon during the last five years. During 1993, 141 permits were issued and 1766 chum were caught from a total of 4841 total salmon. The commercial fishery, which targets chum salmon during most years, has been managed very conservatively due to the importance of subsistence fishing, the limited abundance of local chum salmon stocks and the interception of other stocks bound for Kotzebue Sound, Port Clarence and eastern Norton Sound fisheries. Commercial catches averaged approximately 4,700 chum salmon over the five years (1985 to 1989). There was no buyer during the 1990 season, the commercial fishery was closed during 1991 and during 1992 and 1993 commercial fishing was not allowed until August with only 185 chum salmon being harvested in 1992 and 132 in 1993.

Chum salmon escapement objectives for the seven major index streams (Sinuk, Snake, Nome, Flambeau, Eldorado, Bonanza and Solomon Rivers) totals about 18,000 fish. Maintaining escapements at these levels ensures that sufficient spawning will occur to perpetuate future salmon runs. During the five years prior to 1991, the Nome and Eldorado Rivers have averaged less than 2/3 of the escapement objective. Conservative fisheries management actions were responsible for reversing the declining escapement trend during the past three seasons.

Fisheries management was changed beginning in the 1991 season for the Nome Subdistrict. All rivers in the subdistrict with subsistence salmon fisheries were closed on June 15 and remained closed until the escapement goal for a particular stream seemed assured or until the chum migration was no longer impacted. As escapement goals were approached in individual rivers, a relaxation of the restrictions on those rivers occurred. In those streams where escapements remained poor, the closures remained in effect until August 1. Chum escapements were monitored by aerial surveys and boat surveys throughout the summer. The escapements in 1991 were much improved, with most streams meeting their chum escapement goals. However, subsistence chum catches were slightly more than one-half the long term average. During 1992, a similar approach was used to manage the fishery. The record run of pink salmon that materialized during the second week of July allowed most streams to be opened for subsistence fishing except for chum salmon by beach seine. Escapement index counts for chum salmon were generally overwhelmed by the numbers of pinks and were not meaningful as a result. Management of the Nome Subdistrict will closely parallel that of the 1992 season. Permit catch limits for Nome Subdistrict (also Port Clarence District) streams are presented in Table 3.

#### Golovin Subdistrict

The Golovin Subdistrict will be managed for adequate chum salmon escapement and will not be opened to commercial pink salmon fishing until an aerial survey has been flown indicating an adequate chum salmon escapement is likely. If the incidental harvest of chum salmon in the Golovin Subdistrict reaches 10,000 all commercial salmon fishing in the subdistrict will be closed until the coho migration into freshwater begins. If the chum salmon escapement goals do not appear likely to be met, subsistence fishing will be restricted. It is now possible to require the release of beach seine caught chums, as is the closure of subsistence gill net fishing.

#### Moses Point Subdistrict

Poor escapements on both the Kwiniuk and Tubutulik Rivers have been a concern in the management of the Moses Point chum fishery for several years. Although the Kwiniuk River escapement goal has been decreased from 25,000 to 19,500 chum salmon, that goal has only been met twice since 1984. Commercial fishing will remain closed through June and July to protect the chum salmon stock.

Subsistence closures will be enacted if the chum salmon escapement is projected to fall significantly below the escapement requirements set for the Subdistrict. If subsistence closures are deemed necessary, an attempt will be made to minimize the impact on the subsistence harvest by allowing directed fishing on pink salmon.

#### Unalakleet and Shaktoolik Subdistricts

Beginning in 1990, a few fishermen began drifting gill nets through the deep holes in the Unalakleet River where chinook salmon mill before moving up river to spawn. The large scale of this fishery and its timing after the more traditional commercial and subsistence fisheries again caused concern that the escapement needs were not being met. Prior to the 1993 season, a new regulation was put in place to prohibit the use of unanchored subsistence nets in the Unalakleet River from June 1 to July 15.

Unalakleet and Shaktoolik Subdistricts will be managed alike since past studies have shown salmon bound for these subdistricts intermingle and that harvests in one subdistrict most likely will affect the other. Only special problems like the one outlined above will cause the manager to target a single subdistrict with an action. Commercial salmon fisheries in June will be assumed to target chinook salmon, those in July, pink and in August the fisheries will target coho.

Chum salmon conservation is the overriding concern in these two subdistricts as it is throughout western Alaska. A significant reduction in the commercial chum harvest is planned in order to assure an adequate escapement and to minimize any interception of stocks from outside these subdistricts. Harvests of salmon species other than chum will be affected as little as possible by the conservation actions directed at chum. The king and coho salmon openings will be conducted as they have been in recent years. King openings will be restricted to 24 hours in length and gill net mesh will be greater than 7 1/2 inches. Coho season is defined to begin August 1. Coho gear will be unrestricted and the standard periods will be in effect if there are no conservation concerns.

Because the pink and chum salmon runs are coincidental, the greatest potential for negative impacts on the chum salmon stocks exists during the early July pink fishery. A high demand for pink salmon exists for the first time in years this season. A strong return of pinks is expected so the following fishery restrictions will be in place to conserve chum and yet take advantage of the pink market and even year return during the special pink gear openings. 1) In the Shaktoolik Subdistrict, commercial pink salmon fishing will be allowed between the mouth of the Shaktoolik River and the first bluff at Foothills. 2) In the Unalakleet Subdistrict, commercial pink salmon fishing will be allowed between the mouth of the Egavik River and Black Point. 3) Only four inch stretched measure gill nets will be allowed north of the Unalakleet River, four and one-half or smaller will be allowed south of the Unalakleet. 4) A 20:1 pink:chum ratio will be the standard that will allow for continued pink salmon openings. It is anticipated these restrictions will reduce the harvest of chum salmon in these two subdistricts by 50% as compared to recent years.



Table 1. Commercial salmon catches by species, Norton Sound District, 1961-1992.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1961	5,300	35	13,807	34,327	48,332	101,801
1962	7,286	18	9,156	33,187	182,784	232,431
1963	6,613	71	16,765	55,625	154,789	233,863
1964	2,018	126	98	13,567	148,862	164,671
1965	1,449	30	2,030	220	36,795	40,524
1966	1,553	14	5,755	12,778	80,245	100,345
1967	1,804		2,379	28,879	41,756	74,818
1968	1,045		6,885	71,179	45,300	124,499
1969	2,392		6,836	86,949	82,795	178,972
1970	1,853		4,423	64,908	107,034	178,218
1971	2,593		3,127	4,895	131,362	141,977
1972	2,938		454	45,182	100,920	149,494
1973	1,918		9,282	46,499	119,098	176,797
1974	2,951		2,092	148,519	162,267	315,829
1975	2,393	2	4,593	32,388	212,485	251,861
1976	2,243	11	6,934	87,916	95,956	193,060
1977	4,500	5	3,690	48,675	200,455	257,325
1978	9,819	12	7,335	325,503	189,279	531,948
1979	10,706		31,438	167,411	140,789	350,344
1980	6,311	40	29,842	227,352	180,792	444,337
1981	7,929	56	31,562	232,479	169,708	441,734
1982	5,892	10	91,690	230,281	183,335	511,208
1983	10,308	27	49,735	76,913	319,437	456,420
1984	8,455	6	67,875	119,381	146,442	342,159
1985	19,491	166	21,968	3,647	134,928	180,200
1986	6,303	233	35,600	41,260	146,912	230,308
1987	7,080	207	24,279	2,260	102,457	136,283
1988	4,096	1,252	37,247	74,604	107,967	225,166
1989	5,707	265	44,091	123	42,625	92,811
1990	8,895	434	56,712	501	65,123	131,665
1991	6,608	203	63,647	221	86,871	156,789
1992	4,541	296	105,418	6,284	83,394	199,933
1993	8,972	279	43,283	157,574	53,562	263,670
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5-Yr Avg <sup>a</sup>	5,861	490	61,423	16,347	77,196	161,317
10-Yr Avg <sup>b</sup>	8,104	309	50,657	32,519	123,616	215,205

<sup>a</sup> 1988-1992

<sup>b</sup> 1983-1992

Table 2. Norton Sound chum salmon escapement objectives.<sup>a</sup>

Subdistrict	Stream	Escapement Objective
1) Nome	Sinuk	4,500
	Snake	1,000
	Nome	2,000
	Flambeau	3,250
	Eldorado	5,250
	Bonanza	1,500
	Solomon	550
2) Golovin	Fish	17,500
	Niukluk	8,000
	Boston	2,500
	Kachavik	2,500
3) Moses Point	Kwiniuk <sup>b</sup>	19,500
	Tubutulik	12,000
4) Norton Bay	Ungalik	2,500
	Inglutalik	8,500
5) Shaktoolik	Shaktoolik	11,000
6) Unalakleet	North River <sup>b</sup>	3,500
	Upper Unalakleet	13,000
	Old Woman	2,000

<sup>a</sup> Based on aerial survey counts which represent minimum escapement estimates unless otherwise noted.

<sup>b</sup> Based on tower counts.

Table 3. Nome Subdistrict, Port Clarence District subsistence permit limits.

Nome Subdistrict

Nome River	250 salmon/family (no more than 20 chum and 20 coho)
Snake River	100 salmon/family (no more than 20 chum and 20 coho)
Sinuk River	100 salmon/family
Cripple River	100 salmon/family
Solomon River	100 salmon/family (no more than 20 chum and 20 coho)
Penny River	100 salmon/family
Flambeau River	200 salmon/family
Bonanza River	200 salmon/family
Eldorado River	200 salmon/family
Marine Waters	No catch limitations

Port Clarence District

Pilgrim River	20 salmon/family
Salmon Lake	No salmon/closed after 7/15
Kuzitrin River	100 salmon/family
Above the confluence of the Pilgrim River	

Note: All waters of the Nome Subdistrict are subject to weekly closures from June 15 to August 31. The Sinuk River is outside the Nome Subdistrict boundary and, therefore, subsistence fishing can occur 7 days a week. The Port Clarence District is also subject to weekly closures from July 1 until August 15.

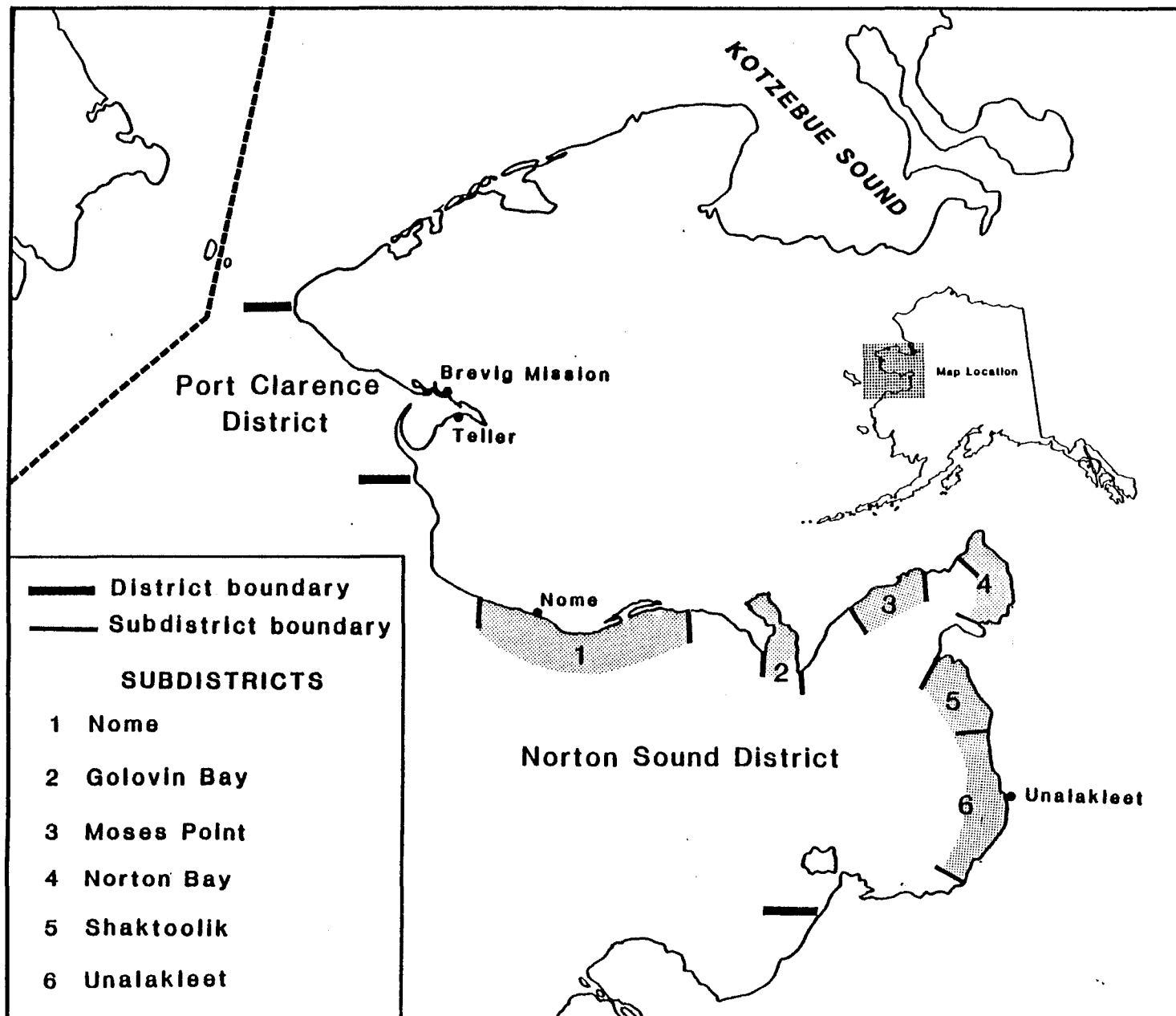


Figure 1. Norton Sound commercial salmon fishing subdistricts.